

OSWALD et al.
Application No. 10/577,941
Response to Office Action dated June 8, 2009

AMENDMENTS TO THE DRAWINGS

As requested in the office action, replacement drawings are submitted for Figures 2, 7-10 and 29 in which the boxes in these Figures have descriptive legends attached to them.

Appendix: Replacement drawings for Figures 2, 7-10 and 29

REMARKS

Reconsideration and allowance of the subject patent application are respectfully requested.

Headings have been added to place the specification in a more traditional U.S. format.

Replacement drawings are submitted for Figures 2, 7-10 and 29 in which the boxes in these Figures have descriptive legends attached to them.

Claims 2-5, 14-20, 22, 28 and 29 were objected to under 37 C.F.R. 1.75(c) as allegedly being of improper dependent form for failing to further limit the subject matter of a previous claim. These claims were also rejected under 35 U.S.C. Section 112, second paragraph, as allegedly being indefinite. Reconsideration of this objection and rejection are respectfully requested in light of the claim amendments and the following remarks.

The numeric limitations in claims 15, 17, 18 and 19 have been rewritten.

With respect to claims 2-5, 14, 16, 20, 22, 28 and 29, Applicant respectfully submits that the plain language of these claims makes it clear that each of these claims further limits the subject matter of independent claim 1. For example, claim 14 further specifies that the receiver and detector of claim 1 are adapted to receive and detect a signal having a bandwidth greater than 5%, 10% or 20% of its frequency. This is a specific detail of the receiver and detector which makes this claim narrower than claim 1. Each of the other rejected dependent claims likewise adds some detail which makes it narrower than the claim from which it depends.

Claims 1-30 and 90 were rejected under 35 U.S.C. Section 102(b) as allegedly being “anticipated” by Drane et al. (U.S. Patent No. 6,275,705) or Hocctor et al. (U.S. Patent Publication No. 2003/0069025).

While not acquiescing in these rejections or in the characterizations of the applied references made in the office action, independent claims 1, 30 and 90 have been amended to direct the claims to an apparatus for determining positional information relating to an object incorporating a transmitter, based on signals received from that transmitter. The independent claims have also been amended to specify that the plurality of receiving elements is provided in a single housing or on a common substrate. The independent claims have also been amended to specify that the processor is operable to obtain a parameter which represents the time a signal was received at each receiving element and to obtain angular positional information relating to the object based on the parameter.

Drane et al. discloses apparatus (a mobile telephone) which is operable to determine its own position relative to the known position of fixed base stations. This is very different than the claimed apparatuses and methods for determining the unknown position of a remote object.

In particular, Drane et al. does not disclose an apparatus or method which is operable to “obtain angular positional information relating to [an] object” based on the relative timing at which a signal transmitted by the object is received at each of a plurality of receiving elements. Referring to Figure 2, Drane et al. discloses a transceiver (14) comprising a plurality of parallel channel receivers (15) each set up to receive a signal at a particular frequency. Signals received by the transceiver (14) are

processed by a processing unit (18) to measure the actual propagation time of a signal from each of a plurality of base stations (12) (column 8, lines 46 to 54). In this manner, a mobile telephone in which the transceiver (14) is disposed can determine its own position relative to the base stations from which it receives the signals using a hyperbolic cell-positioning mode of operation (column 8, lines 16 to 19).

The processing unit (18) of Drane et al. is not, however, operable to apply "a process to the" signals received from each base station "so as to obtain a respective value of a parameter representative of the time the signal was received at [each of a plurality of receiving element[s]]" as would be required for anticipation of the independent claims. Furthermore, the processing unit (18) of Drane et al. is not operable to "compare the values of the parameter thus obtained so as to obtain angular positional information relating to" the base station as would also be required for anticipation of the independent claims.

Consequently, Drane et al. cannot anticipate claims 1, 30, and 90, or the claims that depend therefrom.

The office action appears to equate the plurality of parallel channel receivers (15) with the claimed "plurality of receiver elements." However, even if the receiver channels can be equated with the receiver elements (which the applicant does not accept), they are separated in frequency (column 8, lines 47 and 48 - "each set up to receive a signal at a particular frequency") not space, and therefore they each receive a particular signal transmitted from a base station simultaneously and not at different relative timings. Even using the office action's interpretation, therefore, it would not have been possible for the processing unit (18) to "obtain angular positional information relating to [an]

object" based on the relative timing at which a signal transmitted by the object is received at each of the receiver channels.

Hector et al. discloses a system for tracking a mobile device based on a comparison of the timing at which signals transmitted by the mobile device, and signals transmitted by a fixed beacon transmitter, are received by at least three different base stations located at significantly different locations. Hector et al. does not, however, disclose a receiver "comprising a plurality of receiving elements in a single housing or on a common substrate." It follows, therefore, that Hector et al. also does not disclose apparatus which is operable to "obtain angular positional information relating to [an] object" based on the relative timing at which a signal transmitted by the object is received at each of the plurality of receiving elements.

Specifically, Hector et al. discloses the use of a minimum of three base station receivers and at least one beacon transmitter at distinct locations. However, Hector et al. does not disclose the base stations comprising a plurality of receiver elements and does not disclose determination of angular positional information of an object relative to any of the base stations. Indeed, angular positional information cannot be determined from the signals received at any one base station alone.

Consequently, Hector et al. cannot anticipate claims 1, 30 and 90, or the claims that depend therefrom.

New claims 91-98 depend directly or indirectly from claim 1 and are distinguished from the applied references at least because of these dependencies.

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Favorable reconsideration is respectfully requested.

Respectfully submitted,
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